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Lutetium+: A better clock candidate KYLE ARNOLD, EDUARDO PAEZ, ELNUR HACIYEV, ARIFIN ARIFIN, RADU CAZAN, MURRAY BARRETT, National University of Singapore — With the extreme precision now reached by optical clocks it is reasonable to consider redefinition of the frequency standard. In doing so it is important to look beyond the current best-case efforts and have an eye on future possibilities. We will argue that singly ionized Lutetium is a strong candidate for the next generation of optical frequency standards. Lu+ has a particularly narrow optical transition in combination with several advantageous properties for managing systematic uncertainties compared to the other atomic species. We summarize these properties and our specific strategies for managing the uncertainties due to external perturbations. Finally, we present the status of our ongoing experiments with trapped Lu+, including the results of precision measurements of its atomic structure.

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